東工大　物理学系「物理学リーダーシップ」
FGIP : Foreign Graduate Student Invitation Program
外国人博士課程大学院生の短期招待・共同研究
FGIP – Student Forum セミナー

Luca Buoninfante（University of Groningen, Netherlands）
日時：2018年07月25日（水）15:00 – 16:30, 場所：H156

Towards non-singular metric solutions in ghost-free infinite derivative theories of gravity

Abstract:

In this talk we will introduce a linearized static metric solution in the ghost-free infinite derivative theory of gravity and analyze all the curvature tensors. We will show that at short distances the Ricci tensor and the Ricci scalar are not vanishing, meaning that we do not have a Schwarzschild vacuum solution anymore due to the smearing of the (delta-)source induced by the presence of a non-local gravitational interaction. It also follows that, unlike in Einstein's gravity, the Riemann tensor is not traceless and it does not coincide with the Weyl tensor. Moreover, these curvatures are regularized at short distances such that they are singularity-free, in particular the same happens for the Kretschmann invariant. Unlike the others, the Weyl tensor vanishes at short distances, implying that the spacetime metric becomes conformally-flat in the region of non-locality. These results are very good hints which allow us to study and discuss some aspects of the spacetime metric in the full non-linear regime.

FGIP – Guest student の滞在スケジュール

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滞在期間：07/09 – 08/06　　受入担当：Fabio Chibana de Castro（山口研）

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